

Detection of Water in Martian Soil

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Abstract

The mineral composition of the Martian soil was previously characterized during NASA's two Viking missions, and also on the Mars Pathfinder mission. The recent NASA MER missions will also contribute to our understanding of the composition of the Martian soil, and they will also look for evidence to indicate the presence of water in the soil at some time in the distant past. While the ongoing Mars Global Surveyor orbiter mission has provided (indirect) evidence for the presence of water on Mars, there have not been any direct measurements of water in the Martian soil by any lander mission. We will describe a possible method that may be used to directly detect water in the Martian soil. We will present data obtained using an instrument that we developed at NASA Kennedy Space Center to measure the dielectric properties of *JSC Mars-1* Martian soil simulant under dry and moist conditions, and show that this is a direct method that can be used to detect the presence of water in soil.